

REMARKS

This is in response to the first Office Action mailed April 14, 2005. The Office Action has been fully and carefully considered. As a result, Applicants have made the foregoing amendments and now offer the following remarks in support of the patentability of the claims.

At the outset, Applicants' undersigned representative acknowledges with appreciation the clarity with which the Examiner has set forth her position in the Office Action. This obvious effort by Examiner Trieu has facilitated a substantive analysis of the various positions taken by the Examiner and the preparation of this response thereto. The early indication of allowable subject matter in claims 9, 10, 15, and 16 is also acknowledged with appreciation. Moreover, Applicants greatly appreciate the personal interview graciously granted Applicants' representative by Examiner Trieu on June 16, 2005.

Interview Summary

At the interview on June 16, 2005, Applicants' representative explained that the primary reference, Schray (U.S. Patent No. 5,845,495), disclosed a particular detection system illustrated diagrammatically or schematically. In contrast, Applicants have disclosed and claimed an invention comprising an actual arrangement of elements rather than a system. Schray, it was explained, provides diagrams in Figs. 1 and 2 showing that the disclosed parts are somehow generally related, but not how they are specifically related as real-world parts in an engine arrangement, other than by being

connected together in an operable way. Thus Schray fails to serve as a teaching of the arrangement of actual parts disclosed and claimed by Applicants.

Also at the interview, Applicants' representative explained that the Pichler reference (U.S. Patent Application Publication No. 2004/0031636), while showing an actual arrangement of parts, did not disclose or suggest both first and second branch conduits delivering air to banks of cylinders in a direction substantially opposite the initial delivery of air to the cooler as is now recited in the claims.

Examiner Trieu acknowledged that the illustration in Schray was diagrammatic in form and that the Pichler reference was deemed of secondary importance relative to the Schray patent. However, Examiner Trieu indicated that she had discovered additional prior art relevant to the claims at issue. She kindly provided the undersigned with copies of three documents to consider and asked that these be taken into consideration by Applicants in filing a response to the outstanding Office Action.

These documents included two U.S. patents to Hitomi, et al. (5,421,296 and 5,427,078), and a German patent publication document DE 4018620 A1 (Bartels, the inventor). The '078 Hitomi, et al. patent (hereafter Hitomi) is the more comprehensive of the two and will be addressed in this response. Bartels need not be substantively discussed since it is essentially redundant with respect to JP 61028719 already of record and applied against certain dependent claims.

Examiner Trieu explained that Hitomi showed, in Fig. 1, an arrangement wherein flow of air to the cooler was in a first direction while flow of air to the banks of cylinders was along two parallel branches, both in a second direction opposite the first direction.

She expressed her view that Hitomi was relevant enough to warrant her reconsideration of the allowability initially indicated with respect to claims 9, 10, 15, and 16. Applicants' representative, upon cursory review at the interview, noted that it appeared that Hitomi, like Schray, portrayed a diagrammatic illustration in Fig. 1 rather than a real-world relationship of actual parts and thus was less relevant than might at first appear.

The interview ended with the understanding that Applicants would present a substantive response to the Office action arguing the patentability of the claims. In addition, it was agreed that Applicants would incorporate into the response their view of the documents presented by the Examiner at the interview.

Formal Matters

First, the Examiner has objected to claim 20 under 37 CFR 1.75(c) as being of improper dependent form for failing to further limit the subject matter of a previous claim, and has required that the claim be canceled or placed in proper dependent form. The Examiner then notes that both claims 19 and 20 depend on claim 17 and contain identical limitations. In response, the Examiner's objection has been taken into consideration in the newly presented claims such that each claim is properly dependent and no two claims are identical.

The Rejections

Claims 1-2, 5-6, and 17-18 have been rejected under 35 U.S.C. 102(b) as being anticipated by Schray, et al. (hereafter, Schray) (U.S. Patent No. 5,845,495). Rejected claims 1, 5, and 17 have been canceled. Claims 21, 23, and 31 are newly presented and are carefully patterned after original claims 1, 5, and 17, but drafted so as to more

definitively set forth those features that serve to distinguish Applicants' contribution to the art from that which is disclosed by Schray. The remarks will address new claims 21, 23, and 31 in connection with this rejection. In addition, the remarks will address the Hitomi patent and its relevance and deficiencies in connection with the claims presently in the application.

Schray's specific disclosure is to an arrangement for detecting the speed of rotation deviation between two exhaust gas turbochargers of an internal combustion engine. Schray does not pretend to set forth a specific structural arrangement of elements. Rather Schray illustrates the invention in block diagram or schematic form. See the Brief Description of the Drawings and the first sentence under Detailed Description of the Drawings in Schray. Thus Schray gives no disclosure at all of the specific arrangement of parts in an engine. Instead, Schray shows their general relationship, diagrammatically or schematically, in order to reveal the detection system that is the subject of the Schray patent disclosure.

In a similar vein, Hitomi discloses a system for varying valve closing timing of an intake valve in accordance with an engine operational condition, and only diagrammatically shows a relationship of parts unrepresentative of the real-world structural relationship of the various mechanical components. While the Hitomi '078 patent does not state that the showing in Fig. 1 is merely schematic in so many words, note that the Hitomi '296 patent plainly states in column 1, line 64 that "Fig. 1 is a schematic view" There is thus sufficient evidence that neither Hitomi patent can be relied on to disclose the actual physical and structural relationship of the mechanical

components and that one skilled in this art would immediately recognize that Fig. 1 of Hitomi is a schematic view used to illustrate a system that is not dependent on the specific arrangement of parts. Like Schray, Hitomi provides a diagrammatic or schematic view simply as an aid to illustrating the particular invention that is the subject of the patent.

On the other hand, the present application is directed to a certain arrangement of elements aimed, in part, at more efficient use of engine space and an uncluttered engine. To that end, new claims 21, 23, and 31 now bring out the fact that air is to be delivered to the cooler in a first direction and delivered to the cylinder banks in a second, substantially opposite direction. Accordingly, to the extent that the schematic or diagrammatic showing in Schray can be construed to disclose a particular directional flow of charge air, that directional flow is substantially the same, rather than substantially opposite, upon delivery to the cooler inlet and delivery to the cylinder banks.

To the extent that Hitomi can be construed fairly to show air flow in the substantially opposite directions specified in the claims, each of claims 21, 23, and 31 contains other limitations not present in Hitomi. For example, claim 21 both requires the substantially opposite directional flow of air mentioned above, requires that the charge air conduit be for location in the 'V' between the cylinder banks, and requires that the flow control valve be located between the cooler outlet and the branch connector. Collectively, these elements are not disclosed by Hitomi.

Claim 23, in addition to requiring air flow in substantially opposite directions, specifies that the charge air conduit is in the 'V' between the cylinder banks. Even if Hitomi could fairly be construed to show the claimed flow in substantially opposite directions (a proposition with which Applicants cannot concur), Hitomi does not give any hint of a suggestion as to the location of the charge air conduit. Thus claim 23 clearly defines over Schray and Hitomi.

Claim 31 requires charge air flow through a conduit disposed in the 'V' between the cylinder banks and the opposite direction of flow to the cylinder banks relative to the direction of flow within the 'V' between the cylinders. These are features not fairly taught by Hitomi.

In order for a prior art reference to serve as an anticipation, it must disclose each and every element of the claim, either expressly or under the principle of inherency. See MPEP 2131. Plainly, neither Schray nor Hitomi can be said to anticipate claims 21, 23, and 31 since both Schray and Hitomi fail to disclose each and every element of these claims. Dependent claims 22, 24, and 32 correspond to rejected dependent claims 2, 6, and 18, appropriate amendments having been made to accommodate the limitations of new independent claims 21, 23, and 31, and are patentable over Schray, or over Hitomi, for at least the same reasons as the independent claims. Reconsideration and withdrawal of the rejection under 35 U.S.C. 102(b) over Schray as it may apply to the currently presented claims is requested. Applicants also urge that Hitomi is hardly more revealing as a reference than Schray insofar as the claimed arrangement of components is concerned.

Claims 1-2, 5-6, and 17-18 have been rejected under 35 U.S.C. 102(e) as being anticipated by Pichler, et al. (hereafter, Pichler) (U.S. Patent Application Publication No. US 2004/0031636). As has been noted above, rejected claims 1, 5, and 17 have been canceled. Newly presented claims 21, 23, and 31 are carefully patterned after original claims 1, 5, and 17, but have been drafted so as to more definitively set forth those features that serve to distinguish Applicants' contribution to the art from that which is disclosed by Pichler.

Pichler is an engine arrangement for smaller vehicles, such as snowmobiles, to give a low center of gravity and improved handling. Pichler's specific disclosure shows one or two cylinder engines, in keeping with the general type of vehicle for which it is designed, rather than multi-cylinder engines having banks of cylinders. Pichler does give evidence in Fig. 17 that compressor air travels in a first direction as it reaches the cooler 62, and in an opposite direction after leaving throttle assembly 55 as it enters Y-shaped manifold 64. However, Pichler does not disclose first and second branch conduits delivering air in a second direction substantially opposite to the first direction. Rather, the two branches of the Y-shaped manifold (see Fig. 22) themselves extend in directions opposite to each other. This is more in keeping with the fact that the engine arrangement in Pichler is particularly designed for one or two cylinder engines rather than larger engines that have banks of cylinders.

Accordingly, it should be apparent that Pichler does not anticipate claims 21, 23, or 31 since Pichler fails to show each and every element of these claims. A Y-shaped manifold 64 with branches 66, each extending in opposite directions, simply does not

respond to the language in each of these claims requiring that both the first and second branch conduits deliver air to a bank of cylinders and that they do so in the same, second direction, substantially opposite to the first direction of the air entering the cooler. Moreover, Pichler fails to disclose the charge air conduit in the 'V' between the cylinder banks. As a matter of fact, the one or two cylinder engines of Pichler lack engine banks as specified in the claims. Because Pichler does not anticipate claims 21, 23, and 31, these claims should be allowed. For the same reasons, dependent claims 22, 24, and 32, corresponding substantively to original dependent claims 2, 6, and 18, should also be allowed.

Claims 3-4 and 7-8 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Schray in view of Ohtake (U.S. Patent No. 5,497,751). Claims 3-4 and 7-8 have been canceled. The substance of original claims 3-4 and 7-8 appears in independent claims 21 and 23. Ohtake does not supply what is missing in Schray.

Ohtake has been cited in the Office Action for the proposition that it is conventional in the internal combustion engine art to place the straight portion of the charge air conduit between first and second banks of cylinders. The position then taken in the Office Action is that it would have been obvious to provide such an arrangement in Schray for cost reduction and design simplicity. More important than what Ohtake may disclose, however, is what Ohtake does not disclose. Ohtake does not disclose the flow of air in substantially opposite directions as required in independent claims 21 and 25 and Ohtake does not provide for delivery of charge air from compressor outlet to cooler inlet via a conduit in the 'V' between the cylinder banks. Accordingly, Applicants

maintain Ohtake simply will not suffice to suggest any modification to either Schray or Hitomi that would result in the arrangement of claims 21 and 23 absent the benefit of impermissible hindsight. Allowance of claims 21 and 23 is respectfully requested.

Claims 11 and 19-20 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Schray in view of Aoi (Patent No. JP361028719A). Claims 11 and 19-20 have been canceled and replaced by claims 27 and 33-34. Suffice it to say that the showing in Aoi of the relationship between cooler and compressor does not address the deficiency of Schray as to the substantially opposite directions of air flow required by these claim in view of their dependency on claims 23 and 31. The same can be said for the German disclosure (Bartels) supplied by the Examiner at the interview and deemed to be equivalent to Aoi insofar as these claims are concerned. Accordingly, claims 27 and 33-34 should be allowed for at least the same reasons that claims 23 and 31 should be allowed.

Claims 12-14 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Schray in view of Ohtake and Aoi. Claim 28 is patterned after original claim 12 and claims 13-14 have been canceled. As such, claim 28 contains all the limitations of claim 23 and requires the substantially opposite flow of air as explained above. Any showing in Ohtake of a charge air conduit between cylinder banks or showing in Aoi of a particular arrangement of cooler and compressor does not supply the deficiencies already pointed out in Schray and in Hitomi. Accordingly, the invention defined in claim 28 would not have been obvious to one skilled in the art at the time the invention was made. Allowance of claim 28 is respectfully requested.

New claims 21-34

New claims 21-34 are a reformulation of original claims 1-20. The differences lie in the fact that claims 21, 23, and 31, based on original claims 1, 5, and 17, respectively, recite the aspect of the invention that flow to the cooler is substantially opposite from the ultimate flow to the cylinder banks. Each of claims 21, 23, and 31 additionally requires the charge air conduit be disposed in the 'V' between the cylinder banks. This arrangement helps effect efficient use of the engine space. The number of claims has been reduced by reason of incorporation of certain aspects of original dependent claims into newly presented independent claims 21, 23, and 31. While original claims 9, 10, 15, and 16 were indicated in the Office Action to be allowable, it will be noted that the pertinent elements of original claims 9 and 10 have been incorporated into newly presented claim 23. Claims 25, 26, 29 and 30 correspond to original claims 9, 10, 15, and 16 with claims 25 and 26 reformulated to take into consideration subject matter already present in newly presented claim 23.

Conclusion

Applicants have addressed each rejection put forward by the Examiner, taken into consideration the results of the recent personal interview, and have presented new claims based on the original claims but formulated to clarify defining features that distinguish Applicants' contribution to the art from all the prior art applied in the rejections and proffered by the Examiner at the interview. In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration and reexamination of this application and the timely allowance of the pending claims.


In addition, should the Examiner after considering this response be of the view that there remain matters that may be clarified or rectified by telephone, the Examiner is invited to call the undersigned at 571-203-2757 for discussion. Applicants are open to suggestions that would expedite allowance consistent with securing the scope of protection to which Applicants are entitled under the patent laws.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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